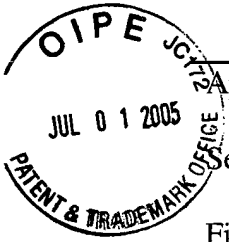


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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



Applicant(s): JARDINE, Peter A.

Dated: July 1, 2005

Serial No.: 10/734,812

Group Art Unit: 1775

Filing Date: 12/11/2003

Examiner: John Zimmerman

Title: SHAPE MEMORY DEVICE
HAVING TWO-WAY
CYLINDRICAL SHAPE MEMORY
EFFECT DUE TO
COMPOSITIONAL GRADIENT
AND METHOD OF
MANUFACTURE

Attorney Docket No.: P042877-06UT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Dear Sir:

This Information Disclosure Statement is submitted herewith:

☐ under 37 CFR 1.97(b), or
(Within three months of filing national application; or date of entry of international application; or before mailing date of first office action on the merits; whichever occurs last)

☒ under 37 CFR 1.97(c) together with either a:
☐ Certification under 37 CFR 1.97(e), or
☒ a \$240.00 fee under 37 CFR 1.17(p), or
(After the CFR 1.97(b) time period, but before final action or notice of allowance, whichever occurs first)

☐ under 37 CFR 1.97(d) together with a:
☐ Certification under 37 CFR 1.97(e), and
☐ a petition under 37 CFR 1.97(d)(2)(ii), and
☐ a \$130.00 petition fee set forth in 37 CFR 1.17(i)(1).
(Filed after final action or notice of allowance, whichever occurs first, but before payment of the issue fee)

Certification Under 37 C.F.R. §1.97(e)

(Check one)

- ☐ Applicant(s) hereby certify that each item of information contained in this information disclosure statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this information disclosure statement;
- ☐ Applicant(s) hereby certify that no item of information contained in the present information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing this certification after making reasonably inquiry, no item of information contained in the present information disclosure statement was known to any individual designated in 1.56(c) more than three months prior to the filing of the information disclosure statement.

PTO Form 1449

☒ Applicant(s) submit herewith Form PTO 1449-Information Disclosure Citation together with copies, of non-U.S. patents, all publications or other information of which applicant(s) are aware, which applicant(s) believe(s) may be material to the examination of this application and for which there may be a duty to disclose in accordance with 37 CFR 1.56.

Additional Comments

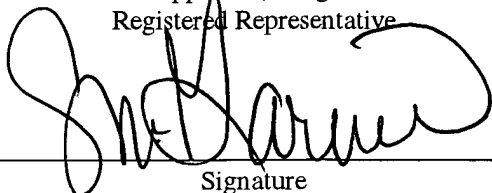
The relevance of the attached references is that this is the closest art of which Applicant is aware. Applicant submits that the above references taken alone or in combination neither anticipate nor render obvious the present invention. Consideration of the foregoing in relation to this application is respectfully requested.

It is requested that the information disclosed herein be made of record in this application.

I hereby certify that this correspondence is being deposited with the United States Postal Service by Express Mail (Label No. EV 736947237 US) in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on July 1 2005

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Registered Representative



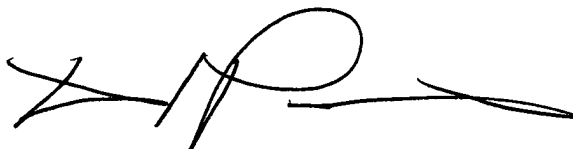
Signature

July 1, 2005

Date of Signature

JSP:kat
Enclosure

Respectfully submitted,



Christopher J. Paradies

Registration No.: 45,692

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Substitute for form 1449A/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Complete if Known

Application Number	10/734,812
Filing Date	12-11-2003
First Named Inventor	JARDINE, PETER A.
Art Unit	1775
Examiner Name	John J. Zimmerman
Attorney Docket Number	P042877-DLUT

Sheet 1 of 5

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number - Kind Code ² (if known)			
		US-4,864,824	09-12-1989	GABRIEL ET AL.	
		US-5,061,914	10-29-1991	BUSCH ET AL.	
		US-5,325,880	07-05-1994	JOHNSON ET AL.	
		US-5,080,455	01-14-1992	KING ET AL.	
		US-5,836,066	11-17-1998	INGRAM	
		US-6,001,195	12-14-1999	KAJWARA ET AL.	
		US-6,358,380	03-19-2002	MANN ET AL.	
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FOREIGN PATENT DOCUMENTS

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		Country Code ³ - Number ⁴ - Kind Code ⁵ (if known)				
		59-116342	07-1984			
		60-83753	05-1985			
		63-166940	07-1988			

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			Application Number	10/734,812	
			Filing Date	12-11-2003	
			First Named Inventor	JARDINE, PETER A.	
			Art Unit	1775	
			Examiner Name	John J. Zimmerman	
Sheet	2	of	5	Attorney Docket Number	P042877-016 UT

NON PATENT LITERATURE DOCUMENTS		
Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		J.A.WALKER ET AL "Thin-film Processing of TiNi Shape Memory Alloy" Sensors and Actuators, vols. A21-A23, p. 243-246, 1990. (No Month)
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		K. KURABAYASHI, et al., "Trial fabrication of micron sized arm using reversible TiNi alloy thin film actuators", Proceedings of the 1993 IEEE/RSJ International Conf. on Intel. Robots and Sys., Yokohama, Japan, pp. 1697-1702, Jul 26-30, 1993

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				Application Number	10/734,812
				Filing Date	12-11-2003
				First Named Inventor	JARDINE, PETER
				Art Unit	1775
				Examiner Name	JOHN ZIMMERMAN
Sheet	3	of	5	Attorney Docket Number	P042877-06 UT

NON PATENT LITERATURE DOCUMENTS		
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		S. MIYAZAKI, et al. "Effect of heat treatment on deformation behavior associated with R-phase and martensitic transformations in Ti-Ni thin films" Trans. Mat. Res. Soc. Jpn., vol. 18B, pp. 1041-1044, 1994 (No Month)
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		S. MIYAZAKI, et al., "Development of perfect shape memory effect in sputter-deposited Ti-Ni films", Proceedings IEEE Mico Electro Mechanical Systems, pp. 176-181, 1994 (No Month).
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		C.M. Ho, et al., "Mems: Science and Technology," Application of Microfabrication to Fluid Mechanics, FED V. 197, ASME 1994, pp. 39-49, 1994. (No Month).
		L.G. Carpenter. Vacuum Technology an Introduction, Adam Hilger Ltd., Bristol 2 nd Edition, (1983), pp. 76-82. (No Month)

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			First Named Inventor	JARDINE, PETER	
			Art Unit	1775	
			Examiner Name	JOHN ZIMMERMAN	
Sheet	4	of	5	Attorney Docket Number	P042877- 6 UT

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		Q.SU, et al., "Martensitic transformation in Ni50Ti50 films", SPIE vol. 2189, pp. 409-412 (1994). (No month)
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		BENDAHLAN MARC, et al., "NiTi shape memory alloy thin films; composition control using optical emission spectroscopy", Thin Solid Films 283 (Sep. 1996), pp. 61-66
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		HO, KEN et al., "Sputter depositions of NiTi thin film exhibiting the SME at room temperatures", Proceedings of the Symposium, 1998 ASME International Mechanical Engineering Congress and Exposition, Nashville, TN, Nov. 14-19, 1999.
		GABRY, B., et al., "Thermodynamic modeling of the recovery strains of sputter-deposited shape memory alloys Ti-Ni and Ti-Ni-Cu thin films", Thin Solid Films 372 (Sep. 2000), pp. 118-133

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			Application Number	10/734,812	
			Filing Date	12-11-2003	
			First Named Inventor	JARDINE, PETER	
			Art Unit	1775	
			Examiner Name	JOHN ZIMMERMAN	
Sheet	5	of	4	Attorney Docket Number	P042877-06 UT

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		HO, KEN K. et al., "Sputter deposition of NiTi thin film shape memory alloy using a heated target", Thin Solid Films 370 (Jul. 2000), pp. 18-29
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		GILL, J. et al., "Three Dimensional Thin Film Shape Memory Microactuator with Inherent Two-Way Actuation," J. of Microelectromechanical Systems, Feb. 2002, V11 # 1, pp. 68-78
		GILL, J.J., et al., "Manufacturing Issues of Thin Film NiTi Microwrapper", Sensors and Actuators, Physical, 93(2), (2001), pp. 148-156

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